

Appendix A  
"Clean Amended Claims"

What is claimed is:

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20. (Currently amended) A headlamp, comprising:
  - a housing defining an inner surface and an outer surface;
  - an outer light transmissive member adapted to engage with said housing,

defining a three-dimensional space therebetween, said outer light transmissive member defining a lens cover, with an inner and outer face, for said housing;

a plurality of reflector units positioned within said space, said plurality of reflector units collimating a first portion of said emitted light rays, forming first incident light rays substantially parallel to a longitudinal axis of said headlamp and directed toward said lens cover;

a corresponding plurality of high-flux light emitting diodes arranged at the base of said reflector units and operatively mounted to a support member such that emitted light rays are directed away from said support member;

a plurality of inner light transmissive members adjacent to said outer light transmissive member, said plurality of inner light transmissive members collimating a second portion of said emitted light rays, forming second incident light rays substantially parallel to said longitudinal axis and directed toward said lens cover, wherein each of said plurality of inner light transmissive members is fixedly secured to at least one alignment mechanism such that each of said plurality of inner light transmissive members corresponds to one of said plurality of light emitting diodes, and wherein said at least one alignment mechanism comprises a plurality of annular extensions corresponding to said plurality of inner light transmissive members, each of said annular extensions integral to said inner face of said outer light transmissive member and extending laterally therefrom; and

a heat dissipating mechanism;

wherein said headlamp effectively emanates white light in any given direction.

21. (original) A headlamp according to claim 20 wherein each of said plurality of inner light transmissive members is an aspheric lens.

22. Canceled

23. (Currently amended) A headlamp, comprising:

a housing defining an inner surface and an outer surface;

an outer light transmissive member adapted to engage with said housing, defining a three-dimensional space therebetween, said outer light transmissive member defining a lens cover, with an inner and outer face, for said housing and wherein said outer light transmissive member has at least one optical surface formed on said inner face of said outer light transmissive member;

a plurality of reflector units positioned within said space, said plurality of reflector units collimating a first portion of said emitted light rays, forming first incident light rays substantially parallel to a longitudinal axis of said headlamp and directed toward said lens cover;

a corresponding plurality of high-flux light emitting diodes arranged at the base of said reflector units and operatively mounted to a support member such that emitted light rays are directed away from said support member;

a plurality of inner light transmissive members adjacent to said outer light transmissive member, said plurality of inner light transmissive members collimating a second portion of said emitted light rays, forming second incident light rays substantially parallel to said longitudinal axis and directed toward said

lens cover, wherein each of said plurality of inner light transmissive members is fixedly secured to at least one alignment mechanism such that each of said plurality of inner light transmissive members corresponds to one of said plurality of light emitting diodes; and

a heat dissipating mechanism;

wherein said headlamp effectively emanates white light in any given direction; and

wherein said at least one optical surface includes a first optical surface for producing a wide light pattern extending approximately thirty (30) degrees left to approximately thirty (30) right of a vertical axis of said headlamp, a second optical surface for producing a narrow light pattern extending approximately eight (8) degrees left to approximately eight (8) degrees right of said vertical axis and approximately zero (0) degrees to approximately four (4) degrees up from a longitudinal axis of said headlamp, and a third optical surface for producing a concentrated point of light located approximately two (2) degrees down from said longitudinal axis and approximately two (2) degrees right of said vertical axis.

24. (original) A headlamp according to claim 23 wherein said at least one optical surface comprises a rectangular array of prism optics.

25. (original) A headlamp according to claim 23 wherein said first optical surface comprises prism optics generally convex toward said plurality of light emitting diodes.

26. (original) A headlamp according to claim 23 wherein said second optical surface comprises prism optics generally convex toward said plurality of light emitting diodes.

27. (original) A headlamp according to claim 23 wherein said third optical surface comprises prism optics generally concave toward said plurality of light emitting diodes.

28. (Currently amended) A headlamp, comprising:

a housing defining an inner surface and an outer surface;

an outer light transmissive member adapted to engage with said housing, defining a three-dimensional space therebetween, said outer light transmissive member defining a lens cover, with an inner and outer face, for said housing and wherein said outer light transmissive member has at least one optical surface formed on said inner face of said outer light transmissive member;

a plurality of reflector units positioned within said space, said plurality of reflector units collimating a first portion of said emitted light rays, forming first incident light rays substantially parallel to a longitudinal axis of said headlamp and directed toward said lens cover;

a corresponding plurality of high-flux light emitting diodes arranged at the base of said reflector units and operatively mounted to a support member such that emitted light rays are directed away from said support member;

a plurality of inner light transmissive members adjacent to said outer light transmissive member, said plurality of inner light transmissive members collimating a second portion of said emitted light rays, forming second incident

light rays substantially parallel to said longitudinal axis and directed toward said lens cover, wherein each of said plurality of inner light transmissive members is fixedly secured to at least one alignment mechanism such that each of said plurality of inner light transmissive members corresponds to one of said plurality of light emitting diodes; and

a heat dissipating mechanism;

wherein said headlamp effectively emanates white light in any given direction; and

wherein said at least one optical surface includes:

a first optical surface for producing a first light pattern extending approximately six (6) degrees left and right of a longitudinal axis of said headlamp;

a second optical surface for producing a second light pattern extending approximately three (3) degrees left to approximately three (3) right of a vertical axis of said headlamp;

a third optical surface for producing a third light pattern extending approximately nine (9) degrees left to approximately nine (9) right of said vertical axis; and

a fourth optical surface for producing a fourth light pattern extending approximately fifteen (15) degrees left to approximately fifteen (1) degrees right of said vertical axis of said headlamp and approximately one (1) degree downward from said longitudinal axis.

29. (original) A headlamp according to claim 28 wherein said at least one optical surface comprises a plurality of adjacent, linear prisms formed on said inner face of said outer light transmissive member.

30. (original) A headlamp according to claim 29 wherein each of said linear prisms has a conic cross section and is generally convex toward said plurality of light emitting diodes to function as a convergent optic.

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54. (Currently amended) A headlamp, comprising:
  - a plurality of light emitting diodes;
  - a housing formed of a material for transferring heat away from said plurality of light emitting diodes;
  - an outer light transmissive member with an inner and outer face, said outer light transmissive member adapted to engage with said housing to define a three-dimensional space therebetween;
  - a unitary reflector subassembly positioned within said space, wherein said reflector subassembly comprises an array of parabolic reflector units;
  - a corresponding array of high-flux light emitting diodes as a light source;
  - at least one inner light transmissive member adjacent to said outer light transmissive member;
  - at least one alignment mechanism, wherein said at least one inner light transmissive member is fixedly secured to said at least one alignment mechanism such that said at least one inner light transmissive member is aligned generally parallel to said outer light transmissive member and in front of said array of light emitting diodes; and

a driver circuit with a current regulation mechanism; and

wherein said outer light transmissive member comprises at least one optical surface to produce a wide light pattern extending approximately thirty (30) degrees left to approximately thirty (30) right of a vertical axis of said headlamp; a narrow light pattern extending approximately eight (8) degrees left to approximately eight (8) degrees right of said vertical axis and approximately zero (0) degrees to approximately four (4) degrees up from a longitudinal axis of said headlamp; and a concentrated point of light located approximately two (2) degrees down from said longitudinal axis and approximately two (2) degrees right of said vertical axis.

55.(original) A headlamp according to claim 54 wherein said at least one optical surface comprises a rectangular array of prism optics formed on said inner face of said outer light transmissive member.

56.(currently amended) A headlamp, comprising:

a plurality of light emitting diodes;

a housing formed of a material for transferring heat away from said plurality of light emitting diodes;

an outer light transmissive member with an inner and outer face, said outer light transmissive member adapted to engage with said housing to define a three-dimensional space therebetween;

a unitary reflector subassembly positioned within said space, wherein said reflector subassembly comprises an array of parabolic reflector units;

a corresponding array of high-flux light emitting diodes as a light source;

at least one inner light transmissive member adjacent to said outer light transmissive member;

at least one alignment mechanism, wherein said at least one inner light transmissive member is fixedly secured to said at least one alignment mechanism such that said at least one inner light transmissive member is aligned generally parallel to said outer light transmissive member and in front of said array of light emitting diodes; and

a driver circuit with a current regulation mechanism; and

wherein said outer light transmissive member comprises at least one optical surface to produce a first light pattern extending approximately six (6) degrees left and right of a longitudinal axis of said headlamp; a second light pattern extending approximately three (3) degrees left to approximately three (3) right of a vertical axis of said headlamp; a third light pattern extending approximately nine (9) degrees left to approximately nine (9) right of said vertical axis; and a fourth light pattern extending approximately fifteen (15) degrees left to approximately fifteen (1) degrees right of said vertical axis of said headlamp and approximately one (1) degree downward from said longitudinal axis.

57. (original) A headlamp according to claim 56 wherein said at least one optical surface comprises a plurality of adjacent linear prisms formed on said inner face of said outer light transmissive member.

58. (original) A headlamp according to claim 57 wherein each of said plurality of linear prisms has a conic cross section and is generally convex toward said plurality of light emitting diodes to function as a convergent optic.

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- 69. (original) A headlamp, comprising:
  - a housing defining an inner surface and an outer surface;
  - an outer light transmissive member adapted to engage with said housing, defining a three-dimensional space therebetween;
  - a plurality of reflector units positioned within said space;
  - a corresponding plurality of high-flux light emitting diodes arranged at the base of said reflector units and operatively mounted to a support member;
  - a plurality of inner light transmissive members adjacent to said outer light transmissive member;
  - a plurality of annular extensions integral to said outer light transmissive member, wherein said plurality of inner light transmissive members are fixedly secured to said plurality of annular extensions;
  - a heat dissipating mechanism for transferring heat away from said plurality of

light emitting diodes; and

a driver circuit with a current regulation mechanism;

wherein said headlamp effectively emanates white light in any given direction.

70. (original) A headlamp, comprising:

a housing;

an outer light transmissive member adapted to engage with said housing to define a three-dimensional space therebetween;

a plurality of reflector units positioned within said space;

a corresponding plurality of high-flux light emitting diodes as a light source arranged at the base of said reflector units;

a plurality of inner light transmissive members adjacent to said outer light transmissive member; and

a rectangular array of prism optics formed on said outer light transmissive member such that said headlamp produces white light in a distribution pattern comprising:

a wide light pattern extending approximately thirty (30) degrees left to approximately thirty (30) right of a vertical axis of said headlamp;

a narrow light pattern extending approximately eight (8) degrees left to approximately eight (8) degrees right of said vertical axis and approximately zero (0) degrees to approximately four (4) degrees up from a longitudinal axis of said headlamp; and

a concentrated point of light located approximately two (2) degrees down from said longitudinal axis and approximately two (2) degrees right of said vertical

axis.

71. (original) A headlamp, comprising:

- a housing;

- an outer light transmissive member adapted to engage with said housing to define a three-dimensional space therebetween;

- a plurality of reflector units positioned within said space;

- a corresponding plurality of high-flux light emitting diodes as a light source arranged at the base of said reflector units;

- a plurality of inner light transmissive members adjacent to said outer light transmissive member;

- and a plurality of adjacent linear optics formed on said outer light transmissive member such that said headlamp produces white light in a distribution pattern comprising:

- a first light pattern extending approximately six (6) degrees left and right of a longitudinal axis of said headlamp;

- a second light pattern extending approximately three (3) degrees left to approximately three (3) right of a vertical axis of said headlamp;

- a third light pattern extending approximately nine (9) degrees left to approximately nine (9) right of said vertical axis; and

- a fourth light pattern extending approximately fifteen (15) degrees left to approximately fifteen (1) degrees right of said vertical axis of said headlamp and approximately one (1) degree downward from said longitudinal axis.

72. Canceled

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74. (Currently amended) A headlamp assembly comprising:

at least two headlamps comprising a plurality of high-flux light emitting diodes as a light source;

each of said at least two headlamps comprising:

a housing;

an outer light transmissive member hermetically sealed with said housing, thereby defining a three-dimensional space;

a plurality of reflector units positioned within said space and operatively arranged to correspond to said plurality of light emitting diodes;

at least one inner light transmissive member adjacent to said outer light transmissive member;

at least one alignment mechanism such that each of said at least one inner light transmission member corresponds to one of said plurality of high-flux light emitting diodes;

a heat dissipating mechanism; and

a driver circuit with a current regulation mechanism, said driver circuit operatively arranged to drive said plurality of light emitting diodes; and

wherein said at least two headlamps includes two (2) low beam headlamps and two (2) high beam headlamps and

wherein each of said low beam headlamps comprises at least one optical surface formed on said outer light transmissive member to produce white light in a distribution pattern comprising:

a wide light pattern extending approximately thirty (30) degrees left to approximately thirty (30) right of a vertical axis of said headlamp;

a narrow light pattern extending approximately eight (8) degrees left to approximately eight (8) degrees right of said vertical axis and approximately zero (0) degrees to approximately four (4) degrees up from said longitudinal axis; and

a concentrated point of light located approximately two (2) degrees down from said longitudinal axis and approximately two (2) degrees right of said vertical axis.

75. (Original) A headlamp assembly according to claim 74 wherein said at least one optical surface comprises a rectangular array of prism optics formed on said inner face of said outer light transmissive member.

76. (Currently amended) A headlamp assembly comprising:

at least two headlamps comprising a plurality of high-flux light emitting diodes as a light source;

each of said at least two headlamps comprising:

a housing;

an outer light transmissive member hermetically sealed with said housing, thereby defining a three-dimensional space;

a plurality of reflector units positioned within said space and operatively arranged to correspond to said plurality of light emitting diodes;

at least one inner light transmissive member adjacent to said outer light transmissive member;

at least one alignment mechanism such that each of said at least one inner



light transmission member corresponds to one of said plurality of high-flux light emitting diodes;

a heat dissipating mechanism; and

a driver circuit with a current regulation mechanism, said driver circuit operatively arranged to drive said plurality of light emitting diodes; and

wherein said at least two headlamps includes two (2) low beam headlamps and two (2) high beam headlamps and

wherein each of said high beam headlamps comprises at least one optical surface formed on said outer light transmissive member to produce white light in a distribution pattern comprising:

a first light pattern extending approximately six (6) degrees left and right of the longitudinal axis;

a second light pattern extending approximately three (3) degrees left to approximately three (3) right of said vertical axis;

a third light pattern extending approximately nine (9) degrees left to approximately nine (9) right of said vertical axis;

and a fourth light pattern extending approximately fifteen (15) degrees left to approximately fifteen (1) degrees right of said vertical axis of said headlamp and approximately one (1) degree downward from said longitudinal axis.

77. (Original) A headlamp assembly according to claim 76 wherein said at least one optical surface comprises a plurality of adjacent linear prisms formed on said inner face of said outer light transmissive member.

78. (Original) A headlamp assembly according to claim 77 wherein each of said linear prisms has a conic cross section and is generally convex toward said plurality of light emitting diodes to function as a convergent optic.

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